REMARKS

Reconsideration of the subject application are respectfully requested in light of the comments which follow. Claims 5-17 and 19-21 are pending in this application (claims 1-4 and 18 withdrawn).

CLAIM REJECTIONS UNDER 35 U.S.C. § 102

Claims 5, 7-17 and 19 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent Application No. 5,683,640 to Ljungberg et al. (USP 5,683,640) for the reasons presented beginning at paragraph 2 of the Official Action.

Claims 5, 7, 11, 15, 16 and 19 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent Application No. 5,487,625 to Ljungberg et al. (USP 5,487,625) for the reasons presented beginning at paragraph 3 of the Official Action.

Claims 5, 6, 11, 15, 16 and 19 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent Application No. 5,766,782 to Ljungberg et al. (USP 5,766,782) or U.S. Patent Application No. 5,516,588 to Van Den Berg et al. (USP 5,516,588) or U.S. Patent Application No. 5,698,314 to Goedicke et al. (USP 5,598,314) for the reasons presented beginning at paragraph 4 of the Official Action.

Each of these rejections are respectfully traversed.

The Examiner indicates that Applicant's prior arguments have been fully considered. However, in dismissing these prior arguments, the Examiner has not addressed the content of those prior arguments, but rather refers to an argument concerning the inherency of columnar grains. Without discussing the merits of the inherency of columnar grains, Applicant respectfully notes that the content of the prior argument over these anticipatory rejections concerned differences other than the columnar grain shape.

Examining the prior response, it is clear that the following arguments were made:

(1) depositing by CVD at a temperature from about 625 to about 800 °C is not disclosed or inherent in the cited prior art.

(2) depositing by CVD at a temperature from about 625 to about 800 °C produces significant differences in microstructure and properties over PVD techniques, PACVD techniques, and CVD techniques at different temperatures than those claimed.

(3) the difference in microstructures include different grain sizes, different crystallized surfaces and different roughness.

(4) the difference in properties include differences in stress states, toughness and edge flaking properties.

The Examiner's dismissal of these arguments is too facile. Characterizing the prior arguments as relying on "the claimed columnar structure is not necessarily inherent" does not accurately reflect the content of the prior argument. Also, evidence of these differences was submitted in the form of (a) references discussing different grain sizes (see, page 9 of the prior response) (b) discussion of the well-known compressive and tensile forces arising from the discussed deposition techniques and (c) reference to the comparative tests contained in the application. This evidence has not been addressed, nevertheless rebutted, by the Examiner.

A. The Examiner's rejection does not meet the inherency standards

The Examiner's rejections make it clear that the legal requirements for establishing inherency have not been set forth. In particular, at paragraph 6 of the Official Action dated Dec. 16, 2005 (the only action setting forth the inherency arguments), the Examiner states that the claimed grain width "is considered inherent." However, as presented in the prior response at page 9, the type of deposition technique and the temperature of deposition results

in different grain sizes. Further, Applicant has show that the cited references use different deposition techniques and/or different temperatures than that claimed. Accordingly, there has been presented in this application evidence directly rebutting the Examiner's inherency argument.

To "establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is *necessarily* present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.'". *In re Robertson,* 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999). The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert,* 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1057 (Fed. Cir. 1993) (reversed rejection because inherency was based on what would result due to optimization of conditions, not what was necessarily present in the prior art); *In re Oelrich,* 666 F.2d 578, 581-82, 212 USPQ 323, 236 (CCPA 1981). "In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." *Ex part Levy,* 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original).

The Examiner attempts to impermissibly shift the burden to Applicants, when the Examiner has failed to establish a *prima facie* case of inherency. Independent Claim 5 recites a particular grain size for a particular material. This grain size for this material is achieved by the deposition technique and the temperature of deposition. The Examiner has failed to provide any evidence that the claimed grain size would be the same in the cited references. It

is the Examiner who must come forth with extrinsic evidence which makes clear that the missing descriptive matter ***is necessarily present*** in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. *See, in re Robertson, supra.* The Examiner has failed to provide such evidence.

B. Applicant has established that the claimed features are not inherent in the applied references

Contrary to the Examiner's response to Applicant's arguments, Applicant has provided evidence from the prior art and from the present application showing that a grain size as claimed would not necessarily be possessed by the prior art that uses different deposition techniques and/or different temperatures. As noted above and in the prior response, depositing by CVD at a temperature from about 625 to about 800 °C produces significant differences in microstructure and properties over PVD techniques, PACVD techniques, and CVD techniques at different temperatures than those claimed. These differences are not merely attorney argument but rather have been substantiated by, at least, the Taschner et al. article and the comparative testing in the application. Therefore, Applicant submits that deposition of similar types of compounds by different deposition techniques and/or at different temperatures does not necessarily result in the same grain size. Further, such different techniques and different temperatures also result in different phases of materials and different material properties such as toughness and edge flaking.

Accordingly, each of the cited references fails to disclose the patentable features of independent Claim 5 and the associated dependent claims.

Finally, the Examiner states that the evidence provided by Applicant is not sufficient. This is simply not the case. Applicant has provided concrete examples from the specification and from reference articles that the claimed grain size is not inherent in the cited references.

In addition, Applicant has provided other differences from the prior art including toughness and flake resistance.

It is simply not reasonable to presume that like materials coated in dissimilar processes result in the same grain size or in any other property. The Examiner has provided absolutely no evidence to establish the proposition that grain size, or any other property, would be the same merely by the use of like materials regardless of the use of dissimilar processes.

In light of the foregoing comments, it is submitted that the rejection of independent Claim 5, and the claims depending therefrom, should be withdrawn.

CLAIM REJECTIONS UNDER 35 U.S.C. § 103

Claims 6 and 20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over (USP 5,766,782) or (USP 5,487,625) for the reasons presented beginning at paragraph 6 of the Official Action. This rejection is respectfully traversed.

Both of these references lack an express or inherent disclosure of all of the features of independent claim 5, as discussed above and as discussed with respect to the Examiner's inherency argument.

With respect to the features of independent claim 20, the cited references do not expressly or inherently disclose at least the claimed feature of the columnar grains with an average grain width of from about 0.1 to about 1.1 μm. This is because, as note above with respect to claim 5, this feature cannot be considered inherent in these references.

Accordingly, reconsideration and withdrawal of the rejection is requested.

Claims 6, 20 and 21 are rejected under 35 U.S.C. § 103(a) as being unpatentable over (USP 5,863,640) for the reasons presented beginning at paragraph 7 of the Official Action.

This reference lacks an express or inherent disclosure of all of the features of independent claim 5, as discussed above and as discussed with respect to the Examiner's inherency argument.

With respect to the features of independent claim 20, the cited reference does not expressly or inherently disclose at least the claimed feature of the columnar grains with an average grain width of from about 0.1 to about 1.1 μm. This is because, as note above with respect to claim 5, this feature cannot be considered inherent in this reference.

Accordingly, reconsideration and withdrawal of the rejection is requested.

Claims 6, 11, 15-17 and 19-21 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Taschner et al. "Deposition of Hard Crystalline Al_2O_3 Coatings by Pulsed d.c. PACVD" or Zywitzki et al. ""Correlation Between Structure and Properties of Reactively Deposited Al_2O_3 Coatings by Pulsed Magnetron Sputtering" for the reasons presented beginning at paragraph 8 of the Official Action. These rejections are respectfully traversed.

Claims 20-21 and claims 6, 11 and 15-17 (as dependent claims of claim 5 recite that the coating comprises at least one layer consisting essentially of crystalline α-Al_2O_3, has a thickness of 0.5 to 10 μm, has columnar grains and has an average grain width from about 0.1 to about 1.1 μm formed by CVD at 625 to 800 °C. Claims 20-21 also include at least one layer consisting of Ti(C,N).

Taschner et al.: This reference discloses deposition of Al_2O_3 using PACVD and has several differences from the claimed cutting tool.

The Al_2O_3 layers disclosed in Taschner et al. are mixed phase layers (see, for example, the discussion at section 3.1.1 where the progression of phases from γ to $\gamma+\alpha$ are discussed; see also conclusions). Full α phase was obtained at higher temperatures consistent

with the observation that "preparation of α-Al_2O_3 between 450 and 700°C seems to be only possible with PACVD or pulsed magnetron sputtering" (p. 892, col. 1). Also, Taschner et al. discloses PACVD which has been previously shown (see prior response and related comments in this response) does not produce the same structure as CVD. Further, Taschner is completely silent as to at least one layer consisting of Ti(C,N) as in claims 20-21. Thus, Taschner et al. does not disclose the invention as claimed and, similar to above, no inherent disclosure in Taschner et al. has been established.

Further, Taschner et al. appears to actually teach away from Applicant's showing of α-Al_2O_3 at about 625 to about 800 °C.

For at least the above reasons, a prima facie case of obviousness has not been established. Reconsideration and withdrawal is respectfully requested.

Zywitzki et al.: This reference discloses deposition by pulsed reactive magnetron sputtering. Al_2O_3 material is deposited by this technique. Page 304 to page 305 of Zywitzki et al. disclose that at 350 °C, a transition from amorphous to γ phase occurs; at 680-770 °C α-phase appears in addition to metastable γ-phase (i.e., a mixed phase) and both α- and γ-phase appear throughout the layer (see Fig. 8 showing the phases present at different temperatures). At substrate temperatures of 760-770 °C, the deposited coatings predominantly consist of α-Al_2O_3, which as shown in Fig. 8, means about 20% γ-phase and 80% α-phase. When formed, the α-phase has a wedge-shaped grain (see caption of Figure 2).

The claims have several differences from the disclosure in Zywitzki et al.

First, at no point from 350 °C to 770°C (the upper and lower temperatures disclosed in Zywitzki et al.) is there a layer of α-Al_2O_3 that does not also contain another phase of Al_2O_3. Thus, there is no disclosure of a layer consisting essentially of α-Al_2O_3 as claimed.

Second, Zywitzki et al. discloses pulsed reactive magnetron sputtering (not CVD as claimed). It has been previously shown (see prior response and related comments in this response) that other types of deposition techniques do not produce the same structure as CVD. Thus, it is not reasonable to assert inherency between the structure of Al_2O_3 formed by pulsed reactive magnetron sputtering is the same as that for CVD deposition. Indeed, Zywitzki et al. discloses that the α-phase has a wedge-shaped grain and not a columnar shaped grain.

For at least the above reasons, a prima facie case of obviousness has not been established. Reconsideration and withdrawal is respectfully requested.

CONCLUSION

From the foregoing, further and favorable action in the form of a Notice of Allowance is earnestly solicited. Should the Examiner feel that any issues remain, it is requested that the undersigned be contacted so that any such issues may be adequately addressed and prosecution of the instant application expedited.

Respectfully submitted,

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